

SEQUENCE LISTING

- <110> MCCARTHY, Sean A
FRASER, Christopher C
SHARP, John D
BARNES, Thomas S
KIRST, Susan J
MYERS, Paul S
WRIGHTON, Nicholas
GOODEARL, Andrew
HOLTZMAN, Douglas A
KHODADOUST, Mehran M
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Ser Ser Val Cys Gln Leu Cys Thr Gly Arg Gln Ile Asn Cys Arg Asn
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Leu Gly Leu Ser Ser Ile Pro Lys Asn Phe Pro Glu Ser Thr Val Phe
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Leu Tyr Leu Thr Gly Asn Asn Ile Ser Tyr Ile Asn Glu Ser Glu Leu
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Thr Gly Leu His Ser Leu Val Ala Leu Tyr Leu Asp Asn Ser Asn Ile
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Leu Tyr Val Tyr Pro Lys Ala Phe Val Gln Leu Arg His Leu Tyr Phe
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Leu Phe Leu Asn Asn Asn Phe Ile Lys Arg Leu Asp Pro Gly Ile Phe
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Lys Gly Leu Leu Asn Leu Arg Asn Leu Tyr Leu Gln Tyr Asn Gln Val
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Ser Phe Val Pro Arg Gly Val Phe Asn Asp Leu Val Ser Val Gln Tyr
 145 150 155 160

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Leu Asn Leu Gln Arg Asn Arg Leu Thr Val Leu Gly Ser Gly Thr Phe
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Val Gly Met Val Ala Leu Arg Ile Leu Asp Leu Ser Asn Asn Asn Ile
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Leu Arg Ile Ser Glu Ser Gly Phe Gln His Leu Glu Asn Leu Ala Cys
195 200 205

Leu Tyr Leu Gly Ser Asn Asn Leu Thr Lys Val Pro Ser Asn Ala Phe
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Glu Val Leu Lys Ser Leu Arg Arg Leu Ser Leu Ser His Asn Pro Ile
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Glu Ala Ile Gln Pro Phe Ala Phe Lys Gly Leu Ala Asn Leu Glu Tyr
245 250 255

Leu Leu Leu Lys Asn Ser Arg Ile Arg Asn Val Thr Arg Asp Gly Phe
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Ser Gly Ile Asn Asn Leu Lys His Leu Ile Leu Ser His Asn Asp Leu
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Glu Asn Leu Asn Ser Asp Thr Phe Ser Leu Leu Lys Asn Leu Ile Tyr
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Leu Lys Leu Asp Arg Asn Arg Ile Ile Ser Ile Asp Asn Asp Thr Phe
305 310 315 320

Glu Asn Met Gly Ala Ser Leu Lys Ile Leu Asn Leu Ser Phe Asn Asn
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Leu Thr Ala Leu His Pro Arg Val Leu Lys Pro Leu Ser Ser Leu Ile
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His Leu Gln Ala Asn Ser Asn Pro Trp Glu Cys Asn Cys Lys Leu Leu
355 360 365

Gly Leu Arg Asp Trp Leu Ala Ser Ser Ala Ile Thr Leu Asn Ile Tyr
370 375 380

Cys Gln Asn Pro Pro Ser Met Arg Gly Arg Ala Leu Arg Tyr Ile Asn
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Ile Thr Asn Cys Val Thr Ser Ser Ile Asn Val Ser Arg Ala Trp Ala
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| 1 | 5 | 10 | 15 |
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| 20 | 25 | 30 | |
| Phe Leu Tyr Leu Thr Gly Asn Asn Ile Ser Tyr Ile Asn Glu Ser Glu | | | |
| 35 | 40 | 45 | |
| Leu Thr Gly Leu His Ser Leu Val Ala Leu Tyr Leu Asp Asn Ser Asn | | | |
| 50 | 55 | 60 | |
| Ile Leu Tyr Val Tyr Pro Lys Ala Phe Val Gln Leu Arg His Leu Tyr | | | |
| 65 | 70 | 75 | 80 |
| Phe Leu Phe Leu Asn Asn Asn Phe Ile Lys Arg Leu Asp Pro Gly Ile | | | |
| 85 | 90 | 95 | |
| Phe Lys Gly Leu Leu Asn Leu Arg Asn Leu Tyr Leu Gln Tyr Asn Gln | | | |
| 100 | 105 | 110 | |
| Val Ser Phe Val Pro Arg Gly Val Phe Asn Asp Leu Val Ser Val Gln | | | |
| 115 | 120 | 125 | |
| Tyr Leu Asn Leu Gln Arg Asn Arg Leu Thr Val Leu Gly Ser Gly Thr | | | |
| 130 | 135 | 140 | |
| Phe Val Gly Met Val Ala Leu Arg Ile Leu Asp Leu Ser Asn Asn Asn | | | |
| 145 | 150 | 155 | 160 |
| Ile Leu Arg Ile Ser Glu Ser Gly Phe Gln His Leu Glu Asn Leu Ala | | | |
| 165 | 170 | 175 | |
| Cys Leu Tyr Leu Gly Ser Asn Asn Leu Thr Lys Val Pro Ser Asn Ala | | | |
| 180 | 185 | 190 | |

| | | | | | | | | | | | | | | | | | | | |
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| Phe | Leu | Phe | Leu | Asn | Asn | Asn | Phe | Ile | Lys | Arg | Leu | Asp | Pro | Gly | Ile | 85 | 90 | 95 | |
| Phe | Lys | Gly | Leu | Leu | Asn | Leu | Arg | Asn | Leu | Tyr | Leu | Gln | Tyr | Asn | Gln | 100 | 105 | 110 | |
| Val | Ser | Phe | Val | Pro | Arg | Gly | Val | Phe | Asn | Asp | Leu | Val | Ser | Val | Gln | 115 | 120 | 125 | |
| Tyr | Leu | Asn | Leu | Gln | Arg | Asn | Arg | Leu | Thr | Val | Leu | Gly | Ser | Gly | Thr | 130 | 135 | 140 | |
| Phe | Val | Gly | Met | Val | Ala | Leu | Arg | Ile | Leu | Asp | Leu | Ser | Asn | Asn | Asn | 145 | 150 | 155 | 160 |
| Ile | Leu | Arg | Ile | Ser | Glu | Ser | Gly | Phe | Gln | His | Leu | Glu | Asn | Leu | Ala | 165 | 170 | 175 | |
| Cys | Leu | Tyr | Leu | Gly | Ser | Asn | Asn | Leu | Thr | Lys | Val | Pro | Ser | Asn | Ala | 180 | 185 | 190 | |
| Phe | Glu | Val | Leu | Lys | Ser | Leu | Arg | Arg | Leu | Ser | Leu | Ser | His | Asn | Pro | 195 | 200 | 205 | |
| Ile | Glu | Ala | Ile | Gln | Pro | Phe | Ala | Phe | Lys | Gly | Leu | Ala | Asn | Leu | Glu | 210 | 215 | 220 | |
| Tyr | Leu | Leu | Leu | Lys | Asn | Ser | Arg | Ile | Arg | Asn | Val | Thr | Arg | Asp | Gly | 225 | 230 | 235 | 240 |
| Phe | Ser | Gly | Ile | Asn | Asn | Leu | Lys | His | Leu | Ile | Leu | Ser | His | Asn | Asp | 245 | 250 | 255 | |
| Leu | Glu | Asn | Leu | Asn | Ser | Asp | Thr | Phe | Ser | Leu | Leu | Lys | Asn | Leu | Ile | 260 | 265 | 270 | |
| Tyr | Leu | Lys | Leu | Asp | Arg | Asn | Arg | Ile | Ile | Ser | Ile | Asp | Asn | Asp | Thr | 275 | 280 | 285 | |
| Phe | Glu | Asn | Met | Gly | Ala | Ser | Leu | Lys | Ile | Leu | Asn | Leu | Ser | Phe | Asn | 290 | 295 | 300 | |
| Asn | Leu | Thr | Ala | Leu | His | Pro | Arg | Val | Leu | Lys | Pro | Leu | Ser | Ser | Leu | 305 | 310 | 315 | 320 |
| Ile | His | Leu | Gln | Ala | Asn | Ser | Asn | Pro | Trp | Glu | Cys | Asn | Cys | Lys | Leu | 325 | 330 | 335 | |

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| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | His | Leu | Gln | Leu | Phe | Pro | Glu | Leu | Leu | Phe | Leu | Gly | Thr | Ala | Lys | 115 | 120 | 125 | |
| Leu | Tyr | Arg | Leu | Asp | Leu | Ser | Glu | Asn | Gln | Ile | Gln | Ala | Ile | Pro | Arg | 130 | 135 | 140 | |
| Lys | Ala | Phe | Arg | Gly | Ala | Val | Asp | Ile | Lys | Asn | Leu | Gln | Leu | Asp | Tyr | 145 | 150 | 155 | 160 |
| Asn | Gln | Ile | Ser | Cys | Ile | Glu | Asp | Gly | Ala | Phe | Arg | Ala | Leu | Arg | Asp | 165 | 170 | 175 | |
| Leu | Glu | Val | Leu | Thr | Leu | Asn | Asn | Asn | Asn | Ile | Thr | Arg | Leu | Ser | Val | 180 | 185 | 190 | |
| Ala | Ser | Phe | Asn | His | Met | Pro | Lys | Leu | Arg | Thr | Phe | Arg | Leu | His | Ser | 195 | 200 | 205 | |
| Asn | Asn | Leu | Tyr | Cys | Asp | Cys | His | Leu | Ala | Trp | Leu | Ser | Asp | Trp | Leu | 210 | 215 | 220 | |
| Arg | Gln | Arg | Pro | Arg | Val | Gly | Leu | Tyr | Thr | Gln | Cys | Met | Gly | Pro | Ser | 225 | 230 | 235 | 240 |
| His | Leu | Arg | Gly | His | Asn | Val | Ala | Glu | Val | Gln | Lys | Arg | Glu | Phe | Val | 245 | 250 | 255 | |
| Cys | Ser | Gly | His | Gln | Ser | Phe | Met | Ala | Pro | Ser | Cys | Ser | Val | Leu | His | 260 | 265 | 270 | |
| Cys | Pro | Ala | Ala | Cys | Thr | Cys | Ser | Asn | Asn | Ile | Val | Asp | Cys | Arg | Gly | 275 | 280 | 285 | |
| Lys | Gly | Leu | Thr | Glu | Ile | Pro | Thr | Asn | Leu | Pro | Glu | Thr | Ile | Thr | Glu | 290 | 295 | 300 | |
| Ile | Arg | Leu | Glu | Gln | Asn | Thr | Ile | Lys | Val | Ile | Pro | Pro | Gly | Ala | Phe | 305 | 310 | 315 | 320 |
| Ser | Pro | Tyr | Lys | Lys | Leu | Arg | Arg | Ile | Asp | Leu | Ser | Asn | Asn | Gln | Ile | 325 | 330 | 335 | |
| Ser | Glu | Leu | Ala | Pro | Asp | Ala | Phe | Gln | Gly | Leu | Arg | Ser | Leu | Asn | Ser | 340 | 345 | 350 | |
| Leu | Val | Leu | Tyr | Gly | Asn | Lys | Ile | Thr | Glu | Leu | Pro | Lys | Ser | Leu | Phe | 355 | 360 | 365 | |

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Glu Gly Leu Phe Ser Leu Gln Leu Leu Leu Leu Asn Ala Asn Lys Ile
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Asn Cys Leu Arg Val Asp Ala Phe Gln Asp Leu His Asn Leu Asn Leu
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Leu Ser Leu Tyr Asp Asn Lys Leu Gln Thr Ile Ala Lys Gly Thr Phe
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Ser Pro Leu Arg Ala Ile Gln Thr Met His Leu Ala Gln Asn Pro Phe
420 425 430

Ile Cys Asp Cys His Leu Lys Trp Leu Ala Asp Tyr Leu His Thr Asn
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Pro Ile Glu Thr Ser Gly Ala Arg Cys Thr Ser Pro Arg Arg Leu Ala
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Asn Lys Arg Ile Gly Gln Ile Lys Ser Lys Lys Phe Arg Cys Ser Ala
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Lys Glu Gln Tyr Phe Ile Pro Gly Thr Glu Asp Tyr Arg Ser Lys Leu
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Ser Gly Asp Cys Phe Ala Asp Leu Ala Cys Pro Glu Lys Cys Arg Cys
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Glu Gly Thr Thr Val Asp Cys Ser Asn Gln Lys Leu Asn Lys Ile Pro
515 520 525

Glu His Ile Pro Gln Tyr Thr Ala Glu Leu Arg Leu Asn Asn Asn Glu
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Phe Thr Val Leu Glu Ala Thr Gly Ile Phe Lys Lys Leu Pro Gln Leu
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Arg Lys Ile Asn Phe Ser Asn Asn Lys Ile Thr Asp Ile Glu Glu Gly
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Ala Phe Glu Gly Ala Ser Gly Val Asn Glu Ile Leu Leu Thr Ser Asn
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Arg Leu Glu Asn Val Gln His Lys Met Phe Lys Gly Leu Glu Ser Leu
595 600 605

Lys Thr Leu Met Leu Arg Ser Asn Arg Ile Thr Cys Val Gly Asn Asp
610 615 620

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| Ser | Phe | Ile | Gly | Leu | Ser | Ser | Val | Arg | Leu | Leu | Ser | Leu | Tyr | Asp | Asn | |
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| Gln | Ile | Thr | Thr | Val | Ala | Pro | Gly | Ala | Phe | Asp | Thr | Leu | His | Ser | Leu | |
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| Ser | Thr | Leu | Asn | Leu | Leu | Ala | Asn | Pro | Phe | Asn | Cys | Asn | Cys | Tyr | Leu | |
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| Ala | Trp | Leu | Gly | Glu | Trp | Leu | Arg | Lys | Lys | Arg | Ile | Val | Thr | Gly | Asn | |
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| Pro | Arg | Cys | Gln | Lys | Pro | Tyr | Phe | Leu | Lys | Glu | Ile | Pro | Ile | Gln | Asp | |
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| Val | Ala | Ile | Gln | Asp | Phe | Thr | Cys | Asp | Asp | Gly | Asn | Asp | Asp | Asn | Ser | |
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| Cys | Ser | Pro | Leu | Ser | Arg | Cys | Pro | Thr | Glu | Cys | Thr | Cys | Leu | Asp | Thr | |
| | | | | 725 | | | | | 730 | | | | | 735 | | |
| Val | Val | Arg | Cys | Ser | Asn | Lys | Gly | Leu | Lys | Val | Leu | Pro | Lys | Gly | Ile | |
| | | | 740 | | | | | 745 | | | | | 750 | | | |
| Pro | Arg | Asp | Val | Thr | Glu | Leu | Tyr | Leu | Asp | Gly | Asn | Gln | Phe | Thr | Leu | |
| | | 755 | | | | | 760 | | | | | 765 | | | | |
| Val | Pro | Lys | Glu | Leu | Ser | Asn | Tyr | Lys | His | Leu | Thr | Leu | Ile | Asp | Leu | |
| | 770 | | | | | 775 | | | | | 780 | | | | | |
| Ser | Asn | Asn | Arg | Ile | Ser | Thr | Leu | Ser | Asn | Gln | Ser | Phe | Ser | Asn | Met | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | |
| Thr | Gln | Leu | Leu | Thr | Leu | Ile | Leu | Ser | Tyr | Asn | Arg | Leu | Arg | Cys | Ile | |
| | | | | 805 | | | | | 810 | | | | | 815 | | |
| Pro | Pro | Arg | Thr | Phe | Asp | Gly | Leu | Lys | Ser | Leu | Arg | Leu | Leu | Ser | Leu | |
| | | | 820 | | | | | 825 | | | | | 830 | | | |
| His | Gly | Asn | Asp | Ile | Ser | Val | Val | Pro | Glu | Gly | Ala | Phe | Asn | Asp | Leu | |
| | | 835 | | | | | 840 | | | | | 845 | | | | |
| Ser | Ala | Leu | Ser | His | Leu | Ala | Ile | Gly | Ala | Asn | Pro | Leu | Tyr | Cys | Asp | |
| | 850 | | | | | 855 | | | | | 860 | | | | | |
| Cys | Asn | Met | Gln | Trp | Leu | Ser | Asp | Trp | Val | Lys | Ser | Glu | Tyr | Lys | Glu | |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 | |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| Pro | Gly | Ile | Ala | Arg | Cys | Ala | Gly | Pro | Gly | Glu | Met | Ala | Asp | Lys | Leu | 885 | 890 | 895 |
| Leu | Leu | Thr | Thr | Pro | Ser | Lys | Lys | Phe | Thr | Cys | Gln | Gly | Pro | Val | Asp | 900 | 905 | 910 |
| Val | Asn | Ile | Leu | Ala | Lys | Cys | Asn | Pro | Cys | Leu | Ser | Asn | Pro | Cys | Lys | 915 | 920 | 925 |
| Asn | Asp | Gly | Thr | Cys | Asn | Ser | Asp | Pro | Val | Asp | Phe | Tyr | Arg | Cys | Thr | 930 | 935 | 940 |
| Cys | Pro | Tyr | Gly | Phe | Lys | Gly | Gln | Asp | Cys | Asp | Val | Pro | Ile | His | Ala | 945 | 950 | 955 |
| Cys | Ile | Ser | Asn | Pro | Cys | Lys | His | Gly | Gly | Thr | Cys | His | Leu | Lys | Glu | 965 | 970 | 975 |
| Gly | Glu | Glu | Asp | Gly | Phe | Trp | Cys | Ile | Cys | Ala | Asp | Gly | Phe | Glu | Gly | 980 | 985 | 990 |
| Glu | Asn | Cys | Glu | Val | Asn | Val | Asp | Asp | Cys | Glu | Asp | Asn | Asp | Cys | Glu | 995 | 1000 | 1005 |
| Asn | Asn | Ser | Thr | Cys | Val | Asp | Gly | Ile | Asn | Asn | Tyr | Thr | Cys | Leu | Cys | 1010 | 1015 | 1020 |
| Pro | Pro | Glu | Tyr | Thr | Gly | Glu | Leu | Cys | Glu | Glu | Lys | Leu | Asp | Phe | Cys | 1025 | 1030 | 1035 |
| Ala | Gln | Asp | Leu | Asn | Pro | Cys | Gln | His | Asp | Ser | Lys | Cys | Ile | Leu | Thr | 1045 | 1050 | 1055 |
| Pro | Lys | Gly | Phe | Lys | Cys | Asp | Cys | Thr | Pro | Gly | Tyr | Val | Gly | Glu | His | 1060 | 1065 | 1070 |
| Cys | Asp | Ile | Asp | Phe | Asp | Asp | Cys | Gln | Asp | Asn | Lys | Cys | Lys | Asn | Gly | 1075 | 1080 | 1085 |
| Ala | His | Cys | Thr | Asp | Ala | Val | Asn | Gly | Tyr | Thr | Cys | Ile | Cys | Pro | Glu | 1090 | 1095 | 1100 |
| Gly | Tyr | Ser | Gly | Leu | Phe | Cys | Glu | Phe | Ser | Pro | Pro | Met | Val | Leu | Pro | 1105 | 1110 | 1115 |
| Arg | Thr | Ser | Pro | Cys | Asp | Asn | Phe | Asp | Cys | Gln | Asn | Gly | Ala | Gln | Cys | 1125 | 1130 | 1135 |

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Ser Tyr Leu Gln Ile Pro Ser Ala Lys Val Arg Pro Gln Thr Asn Ile
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Thr Leu Gln Ile Ala Thr Asp Glu Asp Ser Gly Ile Leu Leu Tyr Lys
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Gly Asp Lys Asp His Ile Ala Val Glu Leu Tyr Arg Gly Arg Val Arg
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Ala Ser Tyr Asp Thr Gly Ser His Pro Ala Ser Ala Ile Tyr Ser Val
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Glu Thr Ile Asn Asp Gly Asn Phe His Ile Val Glu Leu Leu Ala Leu
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Asp Gln Ser Leu Ser Leu Ser Val Asp Gly Gly Asn Pro Lys Ile Ile
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Thr Asn Leu Ser Lys Gln Ser Thr Leu Asn Phe Asp Ser Pro Leu Tyr
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Val Gly Gly Met Pro Gly Lys Ser Asn Val Ala Ser Leu Arg Gln Ala
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Pro Gly Gln Asn Gly Thr Ser Phe His Gly Cys Ile Arg Asn Leu Tyr
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Ile Asn Ser Glu Leu Gln Asp Phe Gln Lys Val Pro Met Gln Thr Gly
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Ile Leu Pro Gly Cys Glu Pro Cys His Lys Lys Val Cys Ala His Gly
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Thr Cys Gln Pro Ser Ser Gln Ala Gly Phe Thr Cys Glu Cys Gln Glu
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Gly Trp Met Gly Pro Leu Cys Asp Gln Arg Thr Asn Asp Pro Cys Leu
    1365                      1370                      1375

Gly Asn Lys Cys Val His Gly Thr Cys Leu Pro Ile Asn Ala Phe Ser
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| | | | | | | |
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| acacggctgg | atgggcctct | gcccagtg | gtacgagtgg | atggggacac | tttgggcttt | 1140 |

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| accagaaaat | atgaggagga | gctgaccctg | accagggaga | actccatccg | gaggctgcat | 1440 |
| tcccatcaca | cggaccccag | gagccagccg | gaggagagtg | tagggctgag | agccgagggc | 1500 |
| cacctgata | gtctcaagga | caacagtagc | tgctctgtga | tgagtgaaga | gcccgagggc | 1560 |
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<211> 1530

<212> DNA

<213> Homo sapiens

<400> 32

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 <213> Homo sapiens

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 35 40 45

 Lys Leu Pro Cys Phe Tyr Arg Gly Asp Ser Gly Glu Gln Val Gly Gln
 50 55 60

 Val Ala Trp Ala Arg Val Asp Ala Gly Glu Gly Ala Gln Glu Leu Ala
 65 70 75 80

Glu Asp Ser Gly Lys Gln Val Asp Leu Val Ser Ala Ser Val Val Val
340 345 350

Val Leu Met Ser Arg Tyr His Arg Arg Lys Ala Gln Gln Met Thr Gln
370 375 380

Leu His Ser His His Thr Asp Pro Arg Ser Gln Pro Glu Glu Ser Val
405 410 415

Cys Ser Val Met Ser Glu Glu Pro Glu Gly Arg Ser Tyr Ser Thr Leu
435 440 445

Ser Gly Arg Ala Glu Glu Glu Glu Asp Gln Asp Glu Gly Ile Lys Gln
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Thr Gly Asn Gly Ile Tyr Ile Asn Gly Arg Gly His Leu Val
500 505 510

<211> 31

<213> Home

<400> 34

Leu Leu Leu Leu Leu Leu Ala Ser Phe Thr Gly Arg Cys Pro Ala
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| Gln | Asn | Leu | Trp | His | Ile | Gly | Arg | Glu | Gly | Ala | Met | Leu | Lys | Cys | Leu | | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | | | |
| Ser | Glu | Gly | Gln | Pro | Pro | Pro | Ser | Tyr | Asn | Trp | Thr | Arg | Leu | Asp | Gly | | | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | | | |
| Pro | Leu | Pro | Ser | Gly | Val | Arg | Val | Asp | Gly | Asp | Thr | Leu | Gly | Phe | Pro | | | | |
| | | | | 260 | | | | 265 | | | | | 270 | | | | | | |
| Pro | Leu | Thr | Thr | Glu | His | Ser | Gly | Ile | Tyr | Val | Cys | His | Val | Ser | Asn | | | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | | | |
| Glu | Phe | Ser | Ser | Arg | Asp | Ser | Gln | Val | Thr | Val | Asp | Val | Leu | Asp | Pro | | | | |
| | 290 | | | | | 295 | | | | | 300 | | | | | | | | |
| Gln | Glu | Asp | Ser | Gly | Lys | Gln | Val | Asp | Leu | Val | Ser | Ala | Ser | Val | Val | | | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | | | |
| Val | Val | Gly | Val | Ile | Ala | Ala | Leu | Leu | Phe | Cys | Leu | Leu | Val | Val | Val | | | | |
| | | | | 325 | | | | | 330 | | | | | 335 | | | | | |
| Val | Val | Leu | Met | Ser | Arg | Tyr | His | Arg | Arg | Lys | Ala | Gln | Gln | Met | Thr | | | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | | | |
| Gln | Lys | Tyr | Glu | Glu | Glu | Leu | Thr | Leu | Thr | Arg | Glu | Asn | Ser | Ile | Arg | | | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | | | |
| Arg | Leu | His | Ser | His | His | Thr | Asp | Pro | Arg | Ser | Gln | Pro | Glu | Glu | Ser | | | | |
| | 370 | | | | | 375 | | | | | 380 | | | | | | | | |
| Val | Gly | Leu | Arg | Ala | Glu | Gly | His | Pro | Asp | Ser | Leu | Lys | Asp | Asn | Ser | | | | |
| 385 | | | | | 390 | | | | | 395 | | | | 400 | | | | | |
| Ser | Cys | Ser | Val | Met | Ser | Glu | Glu | Pro | Glu | Gly | Arg | Ser | Tyr | Ser | Thr | | | | |
| | | | | 405 | | | | | 410 | | | | | 415 | | | | | |
| Leu | Thr | Thr | Val | Arg | Glu | Ile | Glu | Thr | Gln | Thr | Glu | Leu | Leu | Ser | Pro | | | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | | | |
| Gly | Ser | Gly | Arg | Ala | Glu | Glu | Glu | Glu | Asp | Gln | Asp | Glu | Gly | Ile | Lys | | | | |
| | 435 | | | | | | 440 | | | | | 445 | | | | | | | |
| Gln | Ala | Met | Asn | His | Phe | Val | Gln | Glu | Asn | Gly | Thr | Leu | Arg | Ala | Lys | | | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | | | |
| Pro | Thr | Gly | Asn | Gly | Ile | Tyr | Ile | Asn | Gly | Arg | Gly | His | Leu | Val | | | | | |
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 <212> PRT
 <213> Homo sapiens

<400> 36
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Gln Val Ala Trp Ala Arg Val Asp Ala Gly Glu Gly Ala Gln Glu Leu
 35 40 45

Ala Leu Leu His Ser Lys Tyr Gly Leu His Val Ser Pro Ala Tyr Glu
 50 55 60

Gly Arg Val Glu Gln Pro Pro Pro Pro Arg Asn Pro Leu Asp Gly Ser
 65 70 75 80

Val Leu Leu Arg Asn Ala Val Gln Ala Asp Glu Gly Glu Tyr Glu Cys
 85 90 95

Arg Val Ser Thr Phe Pro Ala Gly Ser Phe Gln Ala Arg Leu Arg Leu
 100 105 110

Arg Val Leu Val Pro Pro Leu Pro Ser Leu Asn Pro Gly Pro Ala Leu
 115 120 125

Glu Glu Gly Gln Gly Leu Thr Leu Ala Ala Ser Cys Thr Ala Glu Gly
 130 135 140

Ser Pro Ala Pro Ser Val Thr Trp Asp Thr Glu Val Lys Gly Thr Thr
 145 150 155 160

Ser Ser Arg Ser Phe Lys His Ser Arg Ser Ala Ala Val Thr Ser Glu
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Phe His Leu Val Pro Ser Arg Ser Met Asn Gly Gln Pro Leu Thr Cys
 180 185 190

Val Val Ser His Pro Gly Leu Leu Gln Asp Gln Arg Ile Thr His Ile
 195 200 205

Leu His Val Ser Phe Leu Ala Glu Ala Ser Val Arg Gly Leu Glu Asp
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00661-01601

Gln Asn Leu Trp His Ile Gly Arg Glu Gly Ala Met Leu Lys Cys Leu
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 245 250 255

Pro Leu Pro Ser Gly Val Arg Val Asp Gly Asp Thr Leu Gly Phe Pro
 260 265 270

Pro Leu Thr Thr Glu His Ser Gly Ile Tyr Val Cys His Val Ser Asn
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<210> 37

<211> 25

<212> PRT

<213> Homo sapiens

<400> 37

Val Ser Ala Ser Val Val Val Val Gly Val Ile Ala Ala Leu Leu Phe
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<210> 38

<211> 140

<212> PRT

<213> Homo sapiens

<400> 38

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Ser His His Thr Asp Pro Arg Ser Gln Pro Glu Glu Ser Val Gly Leu
 35 40 45

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Arg Ala Glu Gly His Pro Asp Ser Leu Lys Asp Asn Ser Ser Cys Ser
50 55 60

Val Met Ser Glu Glu Pro Glu Gly Arg Ser Tyr Ser Thr Leu Thr Thr
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Val Arg Glu Ile Glu Thr Gln Thr Glu Leu Leu Ser Pro Gly Ser Gly
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Arg Ala Glu Glu Glu Glu Asp Gln Asp Glu Gly Ile Lys Gln Ala Met
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Asn His Phe Val Gln Glu Asn Gly Thr Leu Arg Ala Lys Pro Thr Gly
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Asn Gly Ile Tyr Ile Asn Gly Arg Gly His Leu Val
130 135 140

<210> 39
<400> 39
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<210> 40
<400> 40
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<210> 41
<211> 2510
<212> DNA
<213> Homo sapiens

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<210> 42
 <211> 897
 <212> DNA
 <213> Homo sapiens

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<400> 42
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<210> 43
 <211> 299
 <212> PRT
 <213> Homo sapiens

<400> 43
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Val Thr Ser Glu Phe His Leu Val Pro Ser Arg Ser Met Asn Gly Gln
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Pro Leu Thr Cys Val Val Ser His Pro Gly Leu Leu Gln Asp Gln Arg
 35 40 45

Ile Thr His Ile Leu His Val Ser Phe Leu Ala Glu Ala Ser Val Arg
 50 55 60

Gly Leu Glu Asp Gln Asn Leu Trp His Ile Gly Arg Glu Gly Ala Met
 65 70 75 80

Leu Lys Cys Leu Ser Glu Gly Gln Pro Pro Pro Ser Tyr Asn Trp Thr
 85 90 95

Arg Leu Asp Gly Pro Leu Pro Ser Gly Val Arg Val Asp Gly Asp Thr
 100 105 110

Leu Gly Phe Pro Pro Leu Thr Thr Glu His Ser Gly Ile Tyr Val Cys
 115 120 125

His Val Ser Asn Glu Phe Ser Ser Arg Asp Ser Gln Val Thr Val Asp
 130 135 140

Val Leu Ala Asp Pro Gln Glu Asp Ser Gly Lys Gln Val Asp Leu Val
 145 150 155 160

Ser Ala Ser Val Val Val Val Gly Val Ile Ala Ala Leu Leu Phe Cys
 165 170 175

Leu Leu Val Val Val Val Leu Met Ser Arg Tyr His Arg Arg Lys
 180 185 190

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<210> 50
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<210> 51
<211> 3114
<212> DNA
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Figure 6

Diagram illustrating the relationship between the number of species (S) and the number of individuals (N) in a community. The x-axis represents the number of individuals (N) and the y-axis represents the number of species (S). The curve shows that as the number of individuals increases, the number of species also increases, following a power-law relationship.

44

Leu

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35 40 45

Ser Arg Arg Leu Tyr Glu Leu His Thr Tyr His Ser Ser Leu Thr Cys
50 55 60

Phe Ser Glu Gly Thr Met Val Ser Glu Lys Met Trp Gly Cys Cys Pro
65 70 75 80

Asn His Trp Lys Ser Phe Gly Ser Ser Cys Tyr Leu Ile Ser Thr Lys
85 90 95

Glu Asn Phe Trp Ser Thr Ser Glu Gln Asn Cys Val Gln Met Gly Ala
 100 105 110

His Leu Val Val Ile Asn Thr Glu Ala Glu Gln Asn Phe Ile Thr Gln
 115 120 125

Gln Leu Asn Glu Ser Leu Ser Tyr Phe Leu Gly Leu Ser Asp Pro Gln
 130 135 140

Gly Asn Gly Lys Trp Gln Trp Ile Asp Asp Thr Pro Phe Ser Gln Asn
 145 150 155 160

Val Arg Phe Trp His Pro His Glu Pro Asn Leu Pro Glu Glu Arg Cys
 165 170 175

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Leu

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Phe Ser Glu Gly Thr Met Val Ser Glu Lys Met Trp Gly Cys Cys Pro
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Asn His Trp Lys Ser Phe Gly Ser Ser Cys Tyr Leu Ile Ser Thr Lys
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His Leu Val Val Ile Asn Thr Glu Ala Glu Gln Asn Phe Ile Thr Gln
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      130              135              140
  
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| | | | | | | | | | | | | | | | |
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35 40 45

Glu Asn Phe Trp Ser Thr Ser Glu Gln Asn Cys Val Gln Met Gly Ala
50 55 60

His Leu Val Val Ile Asn Thr Glu Ala Glu Gln Asn Phe Ile Thr Gln
65 70 75 80

Gln Leu Asn Glu Ser Leu Ser Tyr Phe Leu Gly Leu Ser Asp Pro Lys
85 90 95

Val Met Ala Asn Gly Asn Gly Ser Met Ile Leu Leu Ser Val Lys Met
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Phe Gln
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| Gly Leu Glu Thr Arg Pro Ser Glu Arg Ala Leu Ala Ala Leu Ala Val | 50 | 55 | 60 |
| Ala Leu Ile Leu Glu Ser Glu Arg Met Glu Thr Leu Glu Leu Glu Leu | 65 | 70 | 75 |
| Glu Ser Glu Arg Thr His Arg Cys Tyr Ser Pro His Glu Ile Leu Glu | 85 | 90 | 95 |
| Ala Leu Ala Ser Glu Arg Cys Tyr Ser Val Ala Leu Val Ala Leu Thr | 100 | 105 | 110 |
| His Arg Thr Tyr Arg Gly Leu Asn Pro His Glu Ile Leu Glu Met Glu | 115 | 120 | 125 |
| Thr Ala Ser Pro Gly Leu Asn Pro Arg Ser Glu Arg Ala Arg Gly Ala | 130 | 135 | 140 |
| Arg Gly Leu Glu Thr Tyr Arg Gly Leu Leu Glu His Ile Ser Thr His | 145 | 150 | 155 |
| Arg Thr Tyr Arg His Ile Ser Ser Glu Arg Ser Glu Arg Leu Glu Thr | 165 | 170 | 175 |
| His Arg Cys Tyr Ser Pro His Glu Ser Glu Arg Gly Leu Gly Leu Tyr | 180 | 185 | 190 |
| Thr His Arg Met Glu Thr Val Ala Leu Ser Glu Arg Gly Leu Leu Tyr | 195 | 200 | 205 |
| Ser Met Glu Thr Thr Arg Pro Gly Leu Tyr Cys Tyr Ser Cys Tyr Ser | 210 | 215 | 220 |
| Pro Arg Ala Ser Asn His Ile Ser Thr Arg Pro Leu Tyr Ser Ser Glu | 225 | 230 | 235 |
| Arg Pro His Glu Gly Leu Tyr Ser Glu Arg Ser Glu Arg Cys Tyr Ser | 245 | 250 | 255 |
| Thr Tyr Arg Leu Glu Ile Leu Glu Ser Glu Arg Thr His Arg Leu Tyr | | | |

| | | | | | | | | | | | | | | | | | | | | |
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| 275 | | | | | | | 280 | | | | | | | 285 | | | | | | |
| His | Arg | Ser | Glu | Arg | Gly | Leu | Gly | Leu | Asn | Ala | Ser | Asn | Cys | Tyr | Ser | | | | | |
| 290 | | | | | | | 295 | | | | | | | 300 | | | | | | |
| Val | Ala | Leu | Gly | Leu | Asn | Met | Glu | Thr | Gly | Leu | Tyr | Ala | Leu | Ala | His | | | | | |
| 305 | | | | | | | 310 | | | | | | | 315 | | | | | | |
| Ile | Ser | Leu | Glu | Val | Ala | Leu | Val | Ala | Leu | Ile | Leu | Glu | Ala | Ser | Asn | | | | | |
| 325 | | | | | | | 330 | | | | | | | 335 | | | | | | |
| Thr | His | Arg | Gly | Leu | Ala | Leu | Ala | Gly | Leu | Gly | Leu | Asn | Ala | Ser | Asn | | | | | |
| 340 | | | | | | | 345 | | | | | | | 350 | | | | | | |
| Pro | His | Glu | Ile | Leu | Glu | Thr | His | Arg | Gly | Leu | Asn | Gly | Leu | Asn | Leu | | | | | |
| 355 | | | | | | | 360 | | | | | | | 365 | | | | | | |
| Glu | Ala | Ser | Asn | Gly | Leu | Ser | Glu | Arg | Leu | Glu | Ser | Glu | Arg | Thr | Tyr | | | | | |
| 370 | | | | | | | 375 | | | | | | | 380 | | | | | | |
| Arg | Pro | His | Glu | Leu | Glu | Gly | Leu | Tyr | Leu | Glu | Ser | Glu | Arg | Ala | Ser | | | | | |
| 385 | | | | | | | 390 | | | | | | | 395 | | | | | | |
| Pro | Pro | Arg | Gly | Leu | Asn | Gly | Leu | Tyr | Ala | Ser | Asn | Gly | Leu | Tyr | Leu | | | | | |
| 405 | | | | | | | 410 | | | | | | | 415 | | | | | | |
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| 420 | | | | | | | 425 | | | | | | | 430 | | | | | | |
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| Leu | Asn | Ala | Ser | Asn | Val | Ala | Leu | Ala | Arg | Gly | Pro | His | Glu | Thr | Arg | | | | | |
| 450 | | | | | | | 455 | | | | | | | 460 | | | | | | |
| Pro | His | Ile | Ser | Pro | Arg | His | Ile | Ser | Gly | Leu | Pro | Arg | Ala | Ser | Asn | | | | | |
| 465 | | | | | | | 470 | | | | | | | 475 | | | | | | |
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| 485 | | | | | | | 490 | | | | | | | 495 | | | | | | |
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| 500 | | | | | | | 505 | | | | | | | 510 | | | | | | |
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515

520

525

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Cys Tyr Ser Ala Ser Pro Ser Glu Arg Leu Tyr Ser His Ile Ser Ala
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Glu Gly Glu Ile Val
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<213> Homo sapiens

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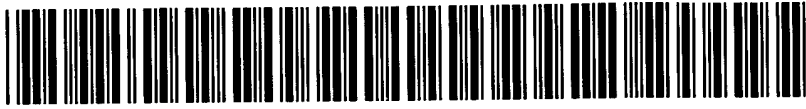
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Ala Ser Gln Val Leu Lys Cys Pro Gly Gly Glu Glu Lys Gly Arg His
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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Lys | Glu | Thr | Met | Lys | Lys | Met | Gly | Glu | Gly | Glu | Ile | Val |
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